Claims

1. A bone cement comprising in admixture a monomer-containing liquid portion and a particulate polymer portion, characterized in that at least one of said portions comprises a dissolved non-polymerizable organoiodine compound.

2. A bone cement comprising in admixture a monomer-containing liquid portion and a particulate polymer portion, characterized in that said liquid portion comprises a polymerizable organoiodine compound and the polymeric structure of said particulate polymer comprises covalently bonded residues of a polymerizable organoiodine compound.

3. A bone cement comprising in admixture a monomer-containing liquid portion and a particulate polymer portion, characterized in that said liquid portion comprises a polymerizable organoiodine compound and/or the polymeric structure of said particulate polymer comprises covalently bonded residues of a polymerizable organoiodine compound, wherein said polymerizable organoiodine compound comprises an organoiodine moiety covalently bonded via an amide but not an ester bond to a polymerizable moiety.

4. A bone cement having a chemically homogenized distribution of all components therein.

5. A bone cement as claimed in claim 4 comprising an X-ray contrast agent.

6. A bone cement as claimed in any one of claims 1 to 5 additionally comprising an antibiotic compound.

7. A bone cement as claimed in claim 6 wherein said antibiotic compound is selected from gentamicin, colistin, erythromycin, clindamicin, penicillins, norfloxacin and chloramphenicol.

8. A bone cement as claimed in either one of claims 6 and 7 wherein said antibiotic compound is present in the form of a lipophilic ester.

9. A bone cement as claimed in any one of claims 1 to 8 wherein the concentration of the organoiodine compound within the polymer particles portion differs by less than 50% compared to the concentration of the organoiodine within the polymer which is prepared in situ from the monomer during use.

10. A bone cement as claimed in any one of claims 6 to 8 wherein the concentration of the antibiotic compound within the polymer particles portion differs by less than 50% compared to the concentration of the organoiodine within the polymer prepared in situ from the monomer during use.

11. A bone cement as claimed in either of claims 9 and 10 wherein said concentration difference is less than 10%.

12. A bone cement as claimed in any of claims 1 to 11 wherein said organoiodine compound is a cross-linking agent and is present in an amount of up to 2% wt of the composition.

13. A bone cement as claimed in any one of claims 1 to 12 wherein the liquid monomer portion additionally comprises at least one of hydroquinone, growth hormone, BMP or vitamins.

14. A bone cement as claimed in any one of claims 1 to 13 wherein said liquid monomer phase is present in a range of from 25 to 45% wt. of cement.

15. A bone cement as claimed in any one of claims 1 to 14 wherein said polymer particle phase additionally comprises at least one of hydroquinone, growth hormone, BMP or vitamins.

16. A bone cement as claimed in any one of claims 1 to 15 wherein said polymer particles have a mode particle size of from 1 to 200 μm.

17. A bone cement as claimed in any one of claims 1 to 16 wherein said polymer particles are polydisperse.

18. A bone cement kit comprising a monomer-containing liquid portion and separate therefrom a particulate polymer portion, wherein at least one of said portions comprises a dissolved non-polymerizable organoiodine compound, said kit optionally and preferably further comprising instructions for the preparation of a bone cement therewith.

19. A bone cement kit comprising a monomer-containing liquid portion and separate therefrom a particulate polymer portion, wherein said liquid portion comprises a polymerizable organoiodine compound and the polymeric structure of said particulate polymer comprises covalently bonded residues of a polymerizable organoiodine compound, said kit optionally and preferably further comprising instructions for the preparation of a bone cement therewith.

20. A bone cement kit comprising a monomer-containing liquid portion and separate therefrom a particulate polymer portion, wherein said liquid portion comprises a

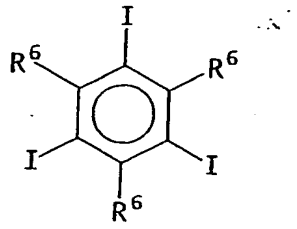
polymerizable organoiodine compound and/or the polymeric structure of said particulate polymer comprises covalently bonded residues of a polymerizable organoiodine compound, wherein said polymerizable organoiodine compound comprises an organoiodine moiety covalently bonded via an amide but not an ester bond to a polymerizable moiety.

21. A bone cement kit providing a bone cement comprising a chemically homogeneous distribution of all components within the final bone cement.

22. A bone cement kit as claimed in claim 21 comprising an X-ray contrast agent.

23. A bone cement kit as claimed in either of claims 21 and 22 additionally comprising an antibiotic agent.

24. An organoiodine compound of formula IV



(IV)

wherein each R^6 group which may be the same or different, comprises an acyloxyalkylcarbonylamino, N-(acyloxyalkyl carbonyl)acyloxyalkylamino, N-acyloxyalkylcarbonyl-N-alkyl-amino, acyloxyalkylaminocarbonyl, bis(acyloxyalkyl)aminocarbonyl, N-acyloxyalkyl-N-alkyl-aminocarbonyl, alkoxyalkylaminocarbonyl, N-alkyl-alkoxyalkylaminocarbonyl, bis(alkoxyalkyl)amino-carbonyl, alkoxyalkylcarbonylamino, N-alkyl-alkoxyalkylcarbonylamino or N-alkoxyalkylcarbonyl-alkoxyalkylamino group or a triiodophenyl group attached

via a 1 to 10 atom bridge optionally substituted by an acyloxyalkyl, acyloxyalkylcarbonyl, acyloxyalkylamino, acyloxyalkylcarbonylamino, acyloxyalkylaminocarbonyl, alkoxyalkyl, alkoxyalkylcarbonyl, alkoxyalkylamino, alkoxyalkylcarbonylamino, or alkoxyalkylaminocarbonyl group or by a polymerizable group, or one or two R^6 groups is/are a polymerizable group, optionally attached via a 1 to 10 atom bridge;or where one R^6 group is a polymerizable group, one or both of the remaining R^6 groups may be an alkylamino, bisalkylamino, alkylcarbonylamino, N-alkyl-alkylcarbonylamino, alkylaminocarbonyl or bis-alkyl-aminocarbonyl group.

25. An organoiodine compound as claimed in claim 24 wherein each R^6 group comprises a triiodophenyl group attached via a 1 to 10 atom bridge composed of bridging atoms selected from O, N and C.

26. A method of producing a bone cement comprising admixing a liquid monomer portion and a particulate polymer portion, characterized in that admixture of said portions is effected under helium.

27. Method for preparing the particulate polymer of the bone cement wherein said polymer particles are formed by emulsion polymerization.

28. A method as claimed in claim 27 wherein said emulsion is oil-in-water.

29. A method as claimed in either of claims 27 and 28 wherein the aqueous phase of the emulsion additionally comprises an emulsifier.

30. A method of producing polymer particles by emulsion polymerisation characterized in that salts are added to the aqueous phase.

31. A method of producing polymer particles by emulsion polymerisation wherein the pH is adjusted by the addition of acids, bases or by the use of buffers.

32. A method as claimed in any one of claims 27 to 31 wherein the polymerization temperature is in the range of from 50 to 100 °C.

33. A method as claimed in claim 32 wherein said polymerization temperature is in the range of from 70 to 80 °C.

34. A method as claimed in any one of claims 27 to 33 additionally comprising a polymerisation initiator.

35. A method as claimed in claim 34 wherein said polymerization initiator is selected from benzyl peroxide (BPO), 2,2'-azo-bis-isobutyronitrile (AIBN) and tert. butyl peroxybenzoate.

36. A method for preparing an organoiodine compound as claimed in claim 24 from triiodophenyl carboxylic acids and amines.

37. A method as claimed in claim 36 additionally comprising a polymerisation initiator.

38. A method as claimed in claim 37 wherein said polymerization initiator is selected from N,N-dimethyl-p-toluidine, N,N-dimethylaminobenzyl alcohol (DMOH) and N,N-dimethylaminobenzyl oleate (DMAO).

39. A method as claimed in either of claims 37 and 38 wherein said polymerization initiator is present in an amount up to 2% wt. of the composition.

40. A method of affixing a joint prosthesis comprising inserting said prosthesis and a bone cement into a bone cavity, characterized in that said cement is a cement as claimed in any one of claims 1 to 3.

41. Bone cement characterized in that the mechanical properties regarding the ultimate tensile strength and ultimate strain are greater than 10% higher than Palacos® bone.